

Product Brief

Intel® 945G Express Chipset

Embedded Computing



Intel® 945G Express Chipset for Embedded Computing

Product Overview

The Intel® 945G Express chipset delivers new, innovative features for interactive clients and many other embedded computing solutions requiring enhanced graphics capabilities.

These advancements, which expand on the capabilities of previous Intel® chipsets, include dual-channel DDR2-667 memory technology, Intel® Graphics Media Accelerator 950 (Intel® GMA 950), enhanced manageability and storage security technologies with Intel® Active Management Technology¹ (Intel® AMT), and Intel® Matrix Storage Technology.²

Designed for, and validated with Intel® Pentium® 4 processors 551^A and 651^A with Hyper-Threading Technology¹ (HT Technology), and Intel® Celeron® D processors 352^A and 341^A – all with Intel® Extended Memory 64 Technology* (Intel® EM64T) – the Intel 945G Express chipset platform provides scalable performance and is an ideal price/performance solution for embedded computing applications.

The Intel 945G Express chipset consists of the Intel® 82945G Graphics and Memory Controller Hub (GMCH) and the Intel® ICH7/ICH7R I/O Controller Hub (ICH). It delivers outstanding system performance through high-bandwidth interfaces such as PCI Express* x16 graphics or I/O, PCI Express x1 I/O ports, next-generation Serial ATA (SATA II), and Hi-Speed USB 2.0 connectivity.

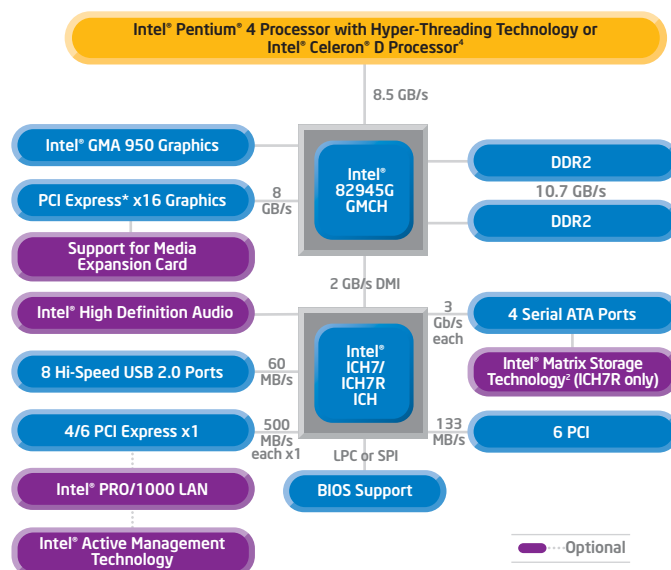
The new graphics core, combined with a high-performance dual-channel memory interface, can deliver significant graphics performance over previous Intel® platforms. With support for dual independent display, enhanced modes for widescreen flat panels, and optimized 3D, embedded platforms based on the Intel 945G Express chipset can deliver an intense, realistic visual experience without requiring a separate graphics card.

Product Highlights

- 533 MHz and 800 MHz system bus provides scalability to higher performance Intel Pentium 4 processors with HT Technology and Intel Celeron D processors
- Dual-channel DDR2-400/533/667 delivers up to 10.7 GB/second of bandwidth and 4 GB memory addressability for faster system responsiveness and support for 64-bit computing
- Intel® Flex Memory Technology facilitates easier upgrades by allowing different memory sizes to be populated and remain in dual-channel mode
- Dual independent display support through the integrated Intel GMA 950 graphics engine and sDVO outputs
- PCI Express x16 Gfx can deliver up to greater than 3.5 times the bandwidth of previous discrete graphics solutions; PCI Express x16 interface can also operate as x1 general-purpose I/O
- Both ADD2 and Media Expansion Cards (MECs) allow users to take advantage of several video output options (DVI, dual independent display, component, composite, HDTV, and LVDS) in a single-card solution. In addition, MECs enable video input capability and personal video recorder (PVR) functionality, and can support a wide range of display types and configurations.
- Intel Matrix Storage Technology provides protection and faster access to digital photo, video, and data content through RAID 0, 1, 5, and 10
- Advanced Host Controller Interface³ provides native command queuing for faster boot time and file transfers
- Direct Media Interface (DMI) delivers 2.0 GB/second concurrent bandwidth to maximize throughput between the core chipset components
- Six PCI masters provide generous system expansion capability
- ICH7 supports up to four PCI Express ports configurable as one single x4 or four single x1
- ICH7R supports up to six PCI Express ports configurable as one single x4 and two x1 ports, or six x1 ports

Product Highlights, continued

- Up to four next-generation SATA II, delivering 3.0 Gb/s of bandwidth each
- Intel AMT enables remote, down-the-wire management of out-of-band networked systems, regardless of system state
- Flexible wired LAN options with or without Intel AMT
- Eight integrated USB 2.0 ports
- Intel® High Definition Audio features eight independent DMA audio engines or AC'97
- Intel® Stable Image Platform support
- Embedded lifecycle support
- Along with a strong ecosystem of hardware and software vendors, including members of the Intel® Communications Alliance (intel.com/go/ica), Intel helps cost-effectively meet development challenges and speed time-to-market



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Product	Product Code	Package	Features
Intel® 82945G Graphics and Memory Controller Hub	82945G	1202 FCBGA	533/800 MHz system bus; DDR2-533/667; Intel® GMA 950 graphics; High-bandwidth DMI
Intel® ICH7R or ICH7 I/O Controller Hub	82801GR 82801GB	652 PBGA 652 PBGA	Six PCI masters and four or six ³ PCI Express* x1 channels; Serial and Parallel ATA interfaces; USB 2.0, (eight ports); Intel® High Definition Audio or AC'97
Intel® PRO/1000 LAN (optional)	82573E	609 µBGA	196 TBGA; GbE (10/100/1000 Mbps) LAN connection; Intel® Active Management Technology ¹

¹ Intel® Active Management Technology requires an ATM-enabled platform like the Intel® 945G Express chipset, Intel® PRO/1000 PM network connection and appropriate third-party software. The system must be plugged into a power source and connected to a LAN.

² Intel® Matrix Storage Technology requires a motherboard with the Intel® 82801GR (ICH7R) I/O Controller Hub System. The system must also have the RAID controller in the BIOS enabled and the Intel Matrix Storage Technology software driver installed. Please consult your system vendor for more information.

³ Valid for ICH7R only.

⁴ The Intel® 945G Express chipset supports the Intel® Pentium® 4 processor with HT Technology and Intel® Celeron® D processor in the LGA-775 socket, with scalability for future processor innovations.

⁵ Hyper-Threading Technology requires a computer system with an Intel® Pentium® 4 processor supporting Hyper-Threading Technology and an HT Technology-enabled chipset, BIOS and operating system. Performance will vary depending on the specific hardware and software used. See <http://www.intel.com/info/hyperthreading> for more information, including details on which processors support HT Technology.

⁶ Intel® processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. See http://www.intel.com/products/processor_number for details.

⁷ Intel® EM64T requires a computer system with a processor, chipset, BIOS, operating system, device drivers and applications enabled for Intel EM64T. Processor will not operate (including 32-bit operation) without an Intel EM64T-enabled BIOS. Performance will vary depending on your hardware and software configurations. See www.intel.com/info/em64t for more information including details on which processors support Intel EM64T or consult with your system vendor for more information.

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